

respect to the lower conveying surface **414** and thus, reorientation of the wire conveyor belt **326**. Placing the drive shaft **400** at the upper end of the arcuate groove **409** results in food product moving off the upper conveying surface **412** and landing on the lower conveying surface **414** with the side of the food product that contacted the upper conveying surface **412** now being opposite the side of the product that contacts the lower conveying surface **414**. That is, food product is flipped when it transfers from the upper conveying surface **412** onto the lower conveying surface **412**. A benefit of flipping food product is that when coatings or toppings are lightweight and airy materials, such as flour, flipping food product removes unattached coatings or toppings.

In one embodiment, the wire conveyor belt **236** is a 24×0.072 Mesh (½" pitch) from Wire Belt Company of America of Londonderry, N.H. However, the wire conveyor belt **236** used in the apparatus can be of different size depending upon, among other things, the size of the food product conveyed on the belt. The wire conveyor belt **236** can have a width of 24 inches, 34 inches, 42 inches, or any other desired width.

Referring now to FIG. 16, in the illustrated embodiment, the apparatus includes two soft roller cylinders **270** having shafts **416**, **418** that are received in grooves **420**, **422** in the housing **399**. The roller cylinders **270** push coating and/or topping onto the food product. The wire belt conveyor **326** allows elimination of the ratchet assemblies **68** that actuates the soft roller assembly **66** of the first embodiment. Instead, food product moving along the wire belt conveyor **326** actuates the soft rollers **270** to provide for rotary actuation thereof. However, if desired, ratchet assemblies such as the ratchet assemblies **68** of the first embodiment can be used.

The Coating Recycle Assembly

Referring now to FIGS. 17 and 18, the coating recycle assembly **294** includes a recycle hopper **303** mounted to a frame **300** and positioned such that recycled coating is funneled into the distributor **236**. The recycle hopper **303** preferably includes adjustable openings to regulate the flow of coating and/or topping to the channels **242**, **244** and the trough **246**. The drag-chain recycle assembly **106** includes a stainless steel channel **308** structure mounted to the frame **300**.

In an embodiment, the drag-chain belt **310** of the recycle assembly **294** is a solid synthetic with tracking lugs (or drive cogs) on the back of the drag-chain belt **310** and flights on the opposite side. In one embodiment, the cogs are molded onto the back of the drag-chain belt **310**. This provides the benefit of eliminating crevices, fissures, hinges or other structures where coatings and/or topping can become lodged and impede cleaning of the belt. An exemplary belt that can be used on the apparatus is a SuperDrive from Volta of Karmiel, Ill. Another exemplary belt that can be used on the apparatus is a plastic flighted a Series 800 Open Hinge Impact Resistant Flight model available from Intralox, LLC of Harahan, La. However, this belt is a segmented, plastic, modular belt that cannot be used in certain applications, such as dairy. When compared to a modular link style plastic belting, the solid synthetic belt provides the advantage of being easier to clean. The drag-chain belt **310** can be made of polyester thermal plastic or polyurethane or the like. The drag-chain belt **310** is four-cornered. In one embodiment, the flights are 6 inches by 6 inches. The flights are oriented such that free ends thereof point toward an outer edge of the stainless steel channel **308** structure.

One corner of the drag-chain belt **310** is driven by a sprocketed drive that engages the cogs, and the other three corners have 90 degree rollers, forming a conveyor rectangle. The

sprocketed drive is received on a drive shaft having a square cross section where it engages the sprocketed drive. A snap ring captures the sprocketed drive onto the drive shaft. The drive shaft cross section transitions to a round cross section away from the sprocketed drive. An overhung load adaptor and a motor, such as a hydraulic motor are mounted on the drive shaft at this point for rotating the drive shaft. Previous apparatuses included multiple belts that were driven by multiple drives.

The conveyor includes an upper length **324**, a lower length **304**, an ascending portion **424**, and a descending portion **426**. The upper length **324** includes an opening (not shown) in the stainless steel channel **308** so that recycled coating falls into the recycle hopper **303**.

Referring to FIGS. 17-18, this arrangement allows the coating recycle assembly **294** to pick up coating and/or topping discharged at the lower length **304** and return it to the upper length **324** via the ascending portion **424** of the drag-chain belt **310**.

The drag-chain belt **310** provides the following advantages. Unlike a belt having two corners, the four corners of the drag-chain belt **310** permits the drag-chain belt **310** to be wrapped around a machine, such as the excited frame assembly **210** and upper elongate pan assembly **212**, thereby saving plant floor space.

The flighted belt minimizes product damage and product spillage cause by previous recycle techniques. In previous apparatuses, coating and/or topping was moved from one belt to another or from one auger to another, leading to damage and spillage of coating and/or topping, both of which cost plants money and time.

The drag-chain belt **310** conveys coating and/or topping in three directions, i.e., collection along the lower length **304**, elevation along the ascending portion **424**, and distribution along the upper length **324**. Previous conveyors only elevated coating and/or topping.

The drag-chain belt **310** can be made from material that is easily cleanable, maintained, and moveable as a single item. Previous belts were made from materials lacking these qualities and oftentimes were made from multiple pieces.

The frame **300** differs from the frame **100** in that it includes distal vertical members **428**, intermediate vertical members **430**, and proximal vertical members **432**, whereas the frame **100** only includes proximal vertical members. In addition, the frame **300** includes upper side members **434**, **436** and upper transverse members **438**, **440**.

Referring to FIG. 17, the wire conveyor belt assembly **398** is suspended inside of the vibratory assembly **206** by the frame **300** such that it is isolated from the vibratory assembly **206**. The wire conveyor belt assembly **398** is suspended with qty. 4 arms **442**, **444**, **446**, **448**, which are hinged at both the frame **300** and at the wire conveyor belt assembly **398**. At the frame **300**, the arms **442**, **444**, **446**, **448** are hinged at ends of transverse supports **450**, **452**, which are supported on the upper side members **434**, **436** at brackets **454**, **456**, **458**, **460**, respectively. The arms **442**, **444**, **446**, **448** have a geometry that allows the wire conveyor belt assembly **398** to swing out of the vibratory assembly **206** without making contact therewith. The swinging motion can be powered by a hydraulic cylinder **462**, pneumatic cylinder, or the like. The hydraulic cylinder **462** is connected to a torque arm **464** and then to a shaft **466** that makes up one of the upper hinge points. The shaft **466** transmits torque into one set of the arms **442**, **446** to create a swinging motion that swings the wire conveyor belt assembly **398** away from the vibratory assembly **206** for